

Claims as Presented:

1. **(Previously Amended)** A connector for connecting together the free pin end and the free box end of two tubular bodies comprising:

a non-upset pin having pin threads formed externally on an end of a first tubular body, said pin threads having a pin thread root extending along a frustoconical surface from a starting vanishing point on said first tubular body and terminating adjacent the free pin end, said pin threads further being formed on a tubular section of said first tubular body having an outside diameter no greater than an outside diameter of a major length of said first tubular body,

a pin nose at the free pin end, said pin nose having an inclined nose section,

a box having box threads formed internally on an end of a second tubular body for engagement with said pin threads, said box threads extending from a starting point on said second tubular body and terminating adjacent the free box end,

an annular inclined shoulder formed internally of said box for engagement with said inclined nose section for preventing said inclined nose section from moving radially away from engagement with said shoulder,

an external seal between said pin and said box adjacent said pin thread starting point and proximate said free box end, said external seal comprising a pin seal surface formed externally of said pin,

an annular seal member carried in a groove within said free box end, and

an internal seal adjacent said box thread starting point and said free pin end whereby said pin threads and said box threads are confined between said external and internal seals when said pin and box are engaged.

2. **(Previously Amended)** A connector as defined in Claim 1 wherein said pin threads run out to an outside diameter of said first tubular body at said vanishing starting point of said threads.

3. **(Previously Amended)** A connector as defined in Claim 1 wherein stab flanks of said pin threads have a greater inclination relative to a central axis of said connector than load flanks of said pin threads.

4. **(Original)** A connector as defined in Claim I wherein said pin seal surface is formed on a radially enlarged section of said first tubular body.

5. **(Original)** A connector as defined in Claim I wherein said pin threads and said box threads are fully confined between said external and internal seals when said pin and box are engaged.

6. **(Original)** A connector for connecting together the free pin end and the free box end of two tubular bodies comprising:

a pin having pin threads formed externally on an end of a first tubular body, said pin threads extending from a starting point on said first tubular body and terminating adjacent the free pin end, said pin threads further being formed on a tubular section of said first tubular body having an outside diameter no greater than an outside diameter of a major length of said first tubular, said pin threads running out on said outside diameter at said starting point,

a box having box threads formed internally on an end of a second tubular body, said box threads extending from a starting point on said second tubular body and terminating adjacent the free box end, said pin adapted to be received in and threadedly engaged with said box,

an external seal between said pin and said box adjacent said pin thread starting point and adjacent said free box end, said external seal comprising an annular, elastomeric seal disposed against said pin and said box, and

an internal seal adjacent said box thread starting point and said free pin end whereby said pin threads and said box threads are at least partially confined between said external and internal seals when said pin and box are engaged.

7. **(Original)** A connector as defined in Claim 6 wherein said pin threads and said box threads are fully confined between said external and internal seals when said pin and box are engaged.

8. **(Previously Amended)** A connector as defined in Claim 6 wherein said external seal is an annular, elastomeric seal ring carried in an annular groove formed in said first tubular body.

9. **(Original)** A connector as defined in Claim 6 wherein said external seal is an annular, elastomeric seal ring carried in an annular groove formed in said second tubular body.

10. **(Previously Amended)** A connector as defined in Claim 6 wherein said external seal is an annular, elastomeric seal ring carried externally of said first tubular and adapted to engage a face formed at an axial end of said box.

11. **(Original)** A connector as defined in Claim 10 wherein said seal ring is retained axially and positioned between said face and a back up ring secured to said pin.

12. **(Original)** A connector as defined in Claim 6 wherein said box carries a frustoconical seal surface adjacent a face at an axial end of said second tubular body and said pin carries an annular, elastomeric seal ring adjacent said starting point for said pin threads whereby said frustoconical seal surface engages said seal ring to provide said external seal when said pin and box are engaged.

13. **(Original)** A connector for connecting together the free pin and the free box end of two tubular bodies comprising:

a pin having pin threads formed externally on an end of a first tubular body, said pin threads extending from a starting point on said first tubular body and terminating in the area of the free pin end,

a box having box threads formed internally on an end of a second tubular body, said box threads extending from a starting point on said second tubular body and terminating in the area of the free box end,

a pin adapted to be received in and threadedly engaged with said box,

an external seal between said pin and said box adjacent said pin thread starting point and adjacent said free box end, said external seal comprising an annular, elastomeric seal disposed against said pin and said box,

an internal seal adjacent said box thread starting point and said free pin end whereby said pin threads and said box threads are at least partially confined between said external and internal seals when said pin and box are engaged,

compression ring threads formed in the area of said free end of said box,
a threaded, annular compression ring encircling said first tubular body and adapted to
threadedly engage said compression ring threads, and
an annular, elastomeric seal ring disposed between said compression ring and said box
whereby threaded engagement of said compression ring with said box forms said external seal.

14. **(Original)** A connector as defined in Claim 13 wherein compression ring threads are
formed on an external surface of said box.

15. **(Original)** A connector as defined in Claim 13 wherein compression ring threads are
formed on an internal surface of said box.

16. **(Original)** A connector as defined in Claim 13 wherein said compression ring
engages said box to form a metal-to-metal seal whereby said compression ring threads are
disposed between said elastomeric seal ring and said metal-to-metal seal.

17. **(Original)** A connector as defined in Claim 13 further including an annular,
elastomeric crush ring axially displaced from said seal ring and adapted to be compressed
between said compression ring and said box whereby said compression ring threads are disposed
between said seal ring and said crush ring when said compression ring is engaged with said box.

18. **(Previously Added)** A connector for connecting together the free pin end and the free
box end of two tubular bodies, comprising:

a non-upset pin having pin threads formed externally on an end of a first tubular body,
said pin threads extending along an external tubular surface starting from a vanishing point on
said first tubular body and terminating in the area of the free pin end, said pin threads further
being formed on, and running out to, said vanishing point, said first tubular body having an
outside diameter no greater than an outside diameter of a major portion of said first tubular body,

a box having box threads formed internally on an end of a second tubular body for
engagement with said pin threads, said box threads extending along an internal tubular surface

from a starting point on said second tubular body and terminating adjacent a box face at the free box end,

a pin nose at the free pin end, said pin nose having an inclined nose section,

an annular inclined shoulder formed internally of said box for engagement with said inclined nose section of said pin nose for preventing said inclined nose section from moving radially away from engagement with said shoulder,

an external seal comprising external seal components on said pin and box for forming an external seal between said pin and said box when said pin and box are threadedly engaged, said external seal including a pin seal component formed externally of said pin and a box seal component formed internally of said box, said box seal component comprising an annular seal member adapted to engage and seal with said pin seal component, and

an internal seal comprising internal seal components on said pin and box for forming an internal seal between said pin and said box when said pin and box are threadedly engaged, said internal seal and said external seal cooperating to isolate said pin threads and said box threads from exposure to elements external to said pin threads and said box threads when said pin and box are threadedly engaged.

19. (Previously Added) A connector as defined in Claim 18, wherein said internal seal is formed by the engagement of said inclined pin nose section with said annular inclined shoulder formed internally of said box.

20. (Previously Added) A connector as defined in Claim 18, wherein said external seal comprises an annular, elastomeric seal member received within a groove formed in one of said external seal components.

21. (Previously Added) A connector as defined in Claim 18, wherein said external seal comprises an annular, elastomeric seal member received within an annular groove formed in said box seal component.

22. **(Previously Added)** A connector as defined in Claim 18, wherein said external seal comprises an annular, elastomeric seal member received within an annular groove formed in said pin seal component.

23. **(Previously Added)** A connector as defined in Claim 18 wherein said second tubular body comprises a coupling having first and second axial coupling ends with said box formed on said first axial coupling end and a second box, symmetrically similar to said first mentioned box, on said second axial coupling end.

24. **(Previously Added)** A connector as defined in Claim 19 wherein said second tubular body comprises a coupling having first and second axial coupling ends with said box formed on said first axial coupling end and a second box, symmetrically similar to said first mentioned box, on said second axial coupling end.

25. **(Previously Added)** A connector as defined in Claim 20 wherein said second tubular body comprises a coupling having first and second axial coupling ends with said box formed on said first axial coupling end and a second box, symmetrically similar to said first mentioned box, on said second axial coupling end.

26. **(Previously Added)** A connector as defined in Claim 21 wherein said second tubular body comprises a coupling having first and second axial coupling ends with said box formed on said first axial coupling end and a second box, symmetrically similar to said first mentioned box, on said second axial coupling end.

27. **(Previously Added)** A connector as defined in Claim 22 wherein said second tubular body comprises a coupling having first and second axial coupling ends with said box formed on said first axial coupling end and a second box, symmetrically similar to said first mentioned box, on said second axial coupling end.

28. (New) A connector for connecting together the free pin end and the free box end of two tubular bodies comprising:

a pin having pin threads on an end of a first tubular body, said pin threads extending from a starting point on said first tubular body and terminating adjacent the free pin end, said pin threads further being formed on a tubular section of said first tubular body having an outside diameter no greater than an outside diameter of a major length of said first tubular, said pin threads running out on said outside diameter at said starting point,

a box having box threads formed internally on an end of a second tubular body, said box threads extending from a starting point on said second tubular body and terminating adjacent the free box end, said pin adapted to be received in and threadedly engaged with said box,

an external seal between said pin and said box adjacent said pin thread starting point and adjacent said free box end, said external seal comprising an annular, elastomeric seal disposed against said pin and said box,

an internal seal adjacent said box thread starting point and said free pin end whereby said pin threads and said box threads are at least partially confined between said external and internal seals when said pin and box are engaged and wherein said external seal is an annular, elastomeric seal ring carried externally of said first tubular and adapted to engage a face formed at an axial end of said box, and

wherein said seal ring is retained axially and positioned between said face and a back up ring secured to said pin.